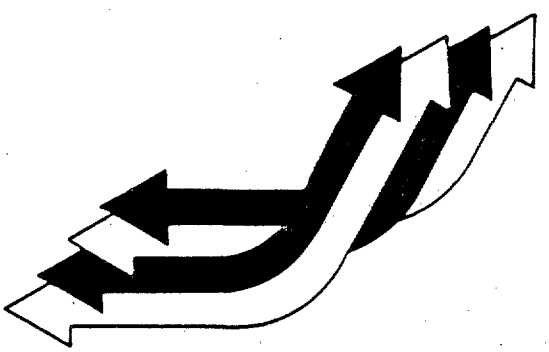
NATIONAL CENTER FOR EDUCATION STATISTICS

Analysis Report

September 1988

Postsecondary Institutions Offering Vocational/Technical Programs: Analysis Findings from High School & Beyond (1980-1986)



Data Series:
DR–HSB–80/84

U.S. Department of Education
Office of Educational Research and Improvement

CS 88-432

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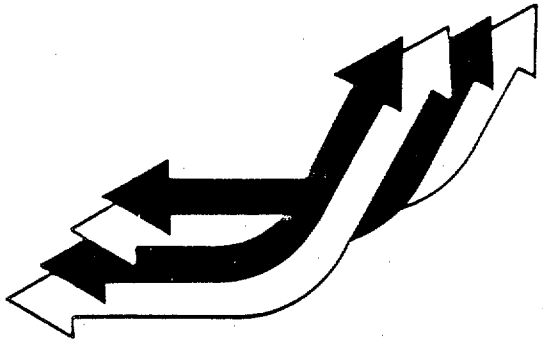
C. Dennis Carroll
Longitudinal Studies Branch
National Center for Education Statistics



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U.S. Department of Education
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September 1988

Foreword

The National Center for Education Statistics, with support from several other governmental agencies, has sponsored three longitudinal studies of U.S. students: the National Longitudinal Study of the High School Class of 1972 (NLS-72), the High School and Beyond (HS&B), and the National Education Longitudinal Study of 1988 (NELS:88). This report is based on the HS&B data for 1980 high school seniors.

This report presents analyses concerning two questions about four types of postsecondary education institutions that offer vocational/technical programs:

What distinguishes the students enrolled in the four types of postsecondary institutions that offer vocational/technical programs?

At what rate do students enrolled in the four types of institutions attain licenses, certificates, associate degrees, and other degrees (including bachelor's degrees)?

High School and Beyond data are publicly available for secondary analyses of the topics presented in this report and other topics as well. The National Center for Education Statistics hopes that this report will stimulate additional analyses using this rich data base. The High School and Beyond data tapes may be ordered by contacting Jack Dusatko at (800) 424-1616 or (202) 357-6522.

Samuel S. Peng
Director, Postsecondary Education Statistics Division
National Center for Education Statistics

Acknowledgments

Many people and organizations have contributed generously to the design and implementation of the High School and Beyond (HS&B) study. Unfortunately, it is not possible to mention the names of all those who helped plan and carry out HS&B. However, several individuals associated with the National Opinion Research Center, the Office of Bilingual Education and Minority Language Affairs, the Office of Planning, Budget and Evaluation, and the National Center for Education Statistics deserve special thanks for helping with funding, solving field problems, and improving the quality of HS&B.

This report was reviewed in the U.S. Department of Education by Charles Cowan, Curtis Baker, and Susan Hill, National Center for Education Statistics. It was also reviewed by Daniel Savage of the American Association of Community and Junior Colleges. While reviewers' comments were helpful, insightful, and well-informed, any errors or limitations in this report are the sole responsibility of the author.

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Postsecondary Institutions Offering Vocational/Technical Programs:

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Non-Technical Abstract

In the year after high school graduation, about 3 of 5 students enrolled in a postsecondary program. About 60 percent of these students enroll in 4-year colleges and universities--the remainder attend four types of institutions: proprietary schools, private not-for-profit schools, public 2-year colleges, and public institutions offering a less than 2-year program. This report, based on the High School and Beyond (1986) data, presents findings concerning two questions:

1. **What distinguishes the students enrolled in the four types of postsecondary institutions that offer vocational/technical programs?**

   - Students enrolled in proprietary (70 percent) and private not-for-profit (75 percent) institutions were more likely to be females than students in public less-than-2-year (47 percent) or public 2-year (54 percent) institutions.

   - About 15 percent of proprietary school students were black and about 9 percent of public 2-year college students were black.

   - Nearly half (48 percent) of proprietary school students were in vocational programs in high school. Less than 30 percent of the students in the other three types of institutions were from vocational high school programs.

   - About one-third of proprietary school students paid $3,000 or more in tuition. Over one-fifth of public 2-year students paid less than $250.

   - About one-fourth of proprietary school students had loans of $2,500 or more. In comparison, 90 percent of public 2-year students had no loans.

- The students enrolled in the four types of postsecondary institutions were not different in terms of family income levels, parental education levels, ability, or rates of full- or part-time enrollment.

2. **What were the rates of attaining licenses, certificates, associate degrees, and other degrees (including bachelor's degrees) by 1986?**

   - Over one-third of proprietary school students attained a license or certificate. In comparison, about one-eighth of the students enrolled in private not-for-profit schools or public 2-year colleges attained a license or certificate.

   - Students enrolled in private not-for-profit schools were most likely to attain associate degrees (28 percent). In comparison, 15 percent of the students from public less-than-2-year schools attained associate degrees.

   - Over one-fifth of public less than 2-year students earned bachelor's degrees. In comparison, about one-tenth (or half the rate) of public 2-year and private not-for-profit students earned bachelor's degrees.

   - Females attained degrees at nearly twice the rate found for males (19 vs. 11 percent).

   - More able[1] students were more likely to earn associate or bachelor's degrees. Less able students were more likely to earn licenses or certificates.

   - Part-time students were less likely to attain degrees than full-time students. However, intensity of enrollment did not make any difference in license/ certificate attainment.

   - Students who borrowed more than $1,000 were more likely to attain degrees.

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[1]Ability was measured using mathematics and verbal tests in high school. More able students scored in the top quartile and less able students scored in the bottom quartile.

Postsecondary Institutions Offering Vocational/Technical Programs:

Analysis Findings from High School & Beyond (1980-1986)

In the year after high school, nearly 3 of 5 1980 graduates enrolled in a postsecondary program. About 60 percent of these graduates pursued academic degrees at 4-year colleges and universities. The other 40 percent pursued vocational or technical skills. There are four major types of postsecondary institutions that offer vocational/technical programs: proprietary schools, private not-for-profit schools, public vocational/technical (offering less than 2-year programs) schools, and public 2-year colleges. This report is focused on students who attended these four types of postsecondary institutions during school year 1980-81.

The first topic considered was *What distinguishes the students enrolled in the four types of postsecondary institutions that offer vocational/technical programs?* The data from the High School and Beyond (HS&B) survey included a variety of student characteristics such as sex, race/ethnicity, family income levels, ability levels, parental education levels, high school program, and U.S. region. Additional variables were included to describe the tuition and fees level of the institution, "intensity" (full- or part-time enrollment status), summer earnings, earnings during the school year, grants, and loans.

The second topic considered was *At what rate do students enrolled in the four types of institutions attain licenses, certificates, associate degrees, and other degrees (including bachelor's degrees)?* Timing is an important consideration in dealing with attainment. The variable selected from HS&B reflected attainments through 1986, or 5 years following enrollment in the vocational/technical school during 1980-81. Hence, this variable should have captured all certificates, licenses, and associate degrees. However, this variable was ordered with mutually exclusive categories. That is, if a student earned a certificate and an associate degree, only the associate degree was coded.

It should be noted that some of the students enrolled in the four types of postsecondary institutions were not enrolled in vocational/technical programs. Rather, these students might have been working towards a bachelor's degree and planning to transfer to a 4-year college. Many 4-year colleges have admissions policies that facilitate transfers for engineering and health programs from some of the vocational/technical institutions.

High School and Beyond Data

The National Center for Education Statistics began the High School and Beyond study with a nationally representative sample of high school seniors in 1980. All of the analyses presented in this report were based on the senior cohort of the HS&B study. During this base-year, HS&B gathered students' responses to questionnaire items concerning student sex, race/ethnicity, family income, and high school program, amoung others. In addition, students were tested during the base-year of the

study. These test scores were also incorporated into the analyses presented in this report.

The 1980 HS&B seniors were surveyed again in 1982, 1984, and 1986. In each, items were included to identify the postsecondary institutions they had attended and their employment histories. Data concerning postsecondary enrollments consisted of school names and addresses (which were coded for merging with other files), starting and ending months, and full- or part-time status. Data concerning institution type (e.g., proprietary) were merged with the HS&B data using two sources: the Higher Education General Information Survey (HEGIS) and the Postsecondary Career School Survey.

In 1984, NCES surveyed the student financial aid offices at the postsecondary institutions attended by HS&B seniors. Records concerning the grants, loans, and college work/study aid awarded to the students were collected. In addition, State guarantee agencies were contacted and Federal Guaranteed Student Loan data were gathered.

Background

Figure 1 displays the rates at which 1980 high school seniors attended postsecondary institutions during school year 1980-81. Taken together, the proprietary, not-for-profit private, and public less-than-2-year schools attracted only about 1 in 20 high school students, while the public 2-year institutions attracted nearly 1 in 5.

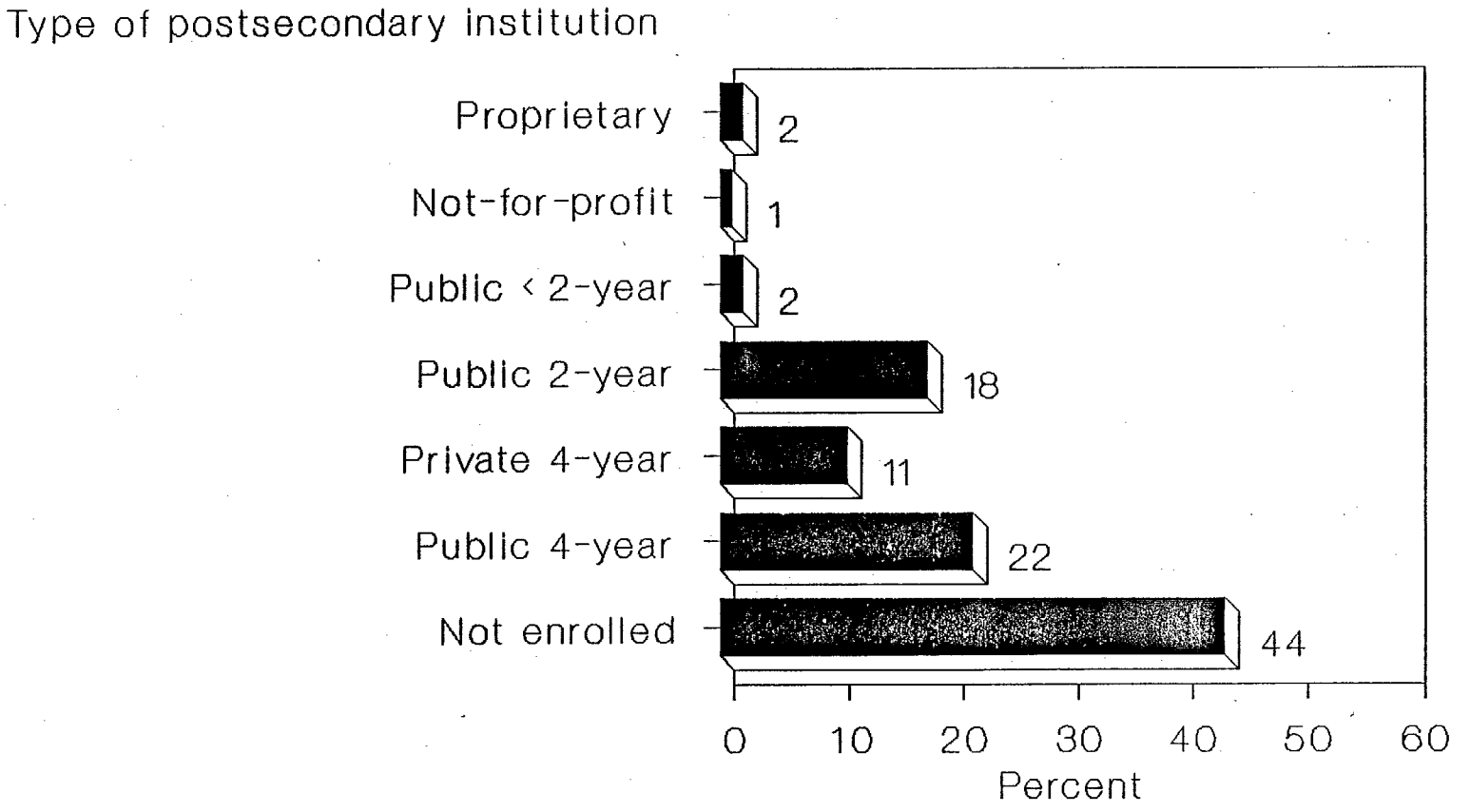
Of the 1980 high school seniors who did enroll in a postsecondary institution during school year 1980-81, the vocational/technical sector accounted for about 40 percent of the students (see figure 2). Clearly, the enrollment in the public 2-year sector is larger than the other three types of vocational/technical schools, combined.

Student Body Characteristics

To identify how the HS&B students enrolled in the four types of postsecondary institutions differed, a two-step analysis was used. First, a discriminant function was estimated to determine the subset of characteristics to be discussed in this report. Second, simple percentage distributions were developed for the students enrolled in the four types of institutions.

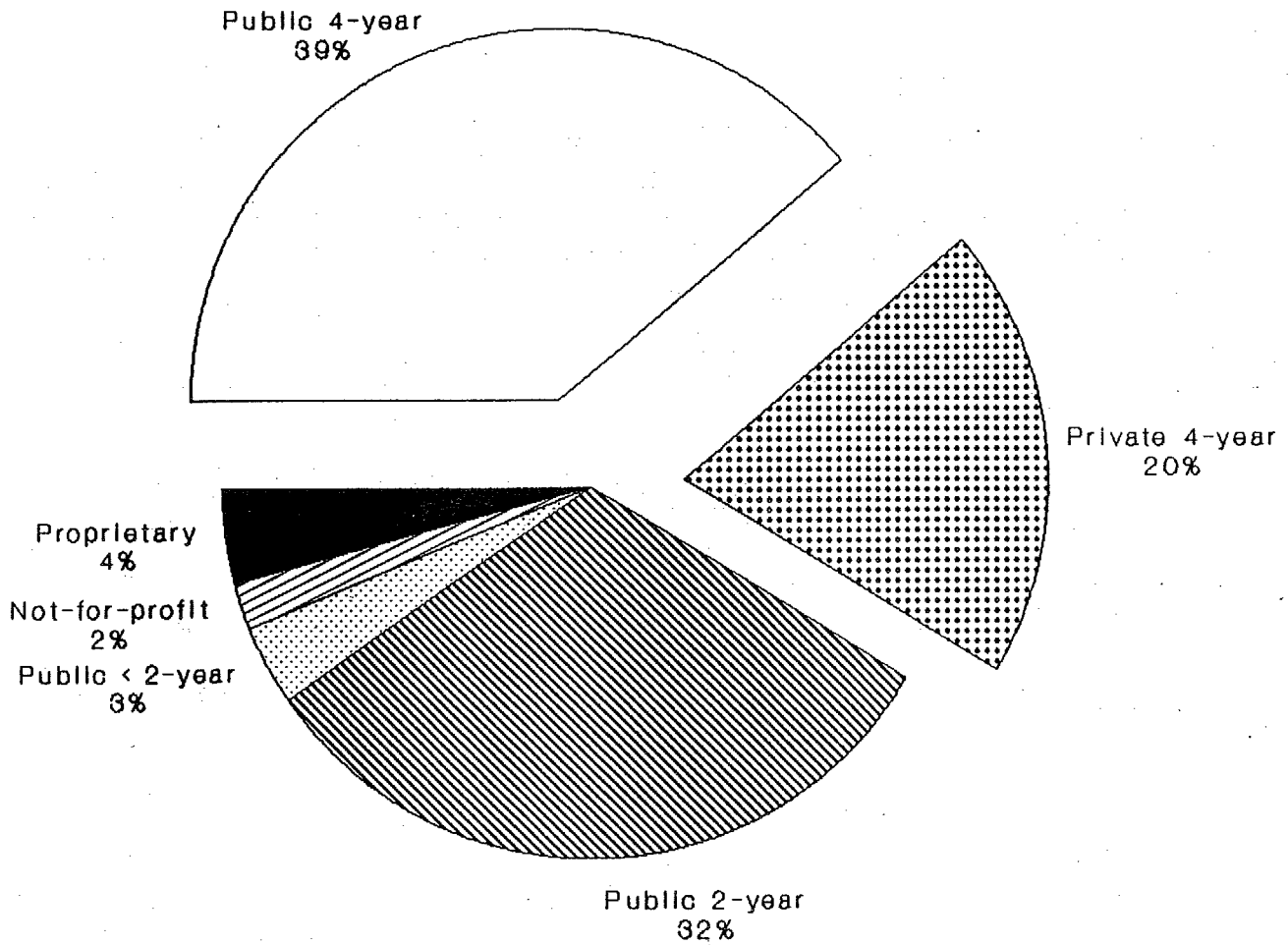
Discriminant analysis. Table 1 displays the discriminant functions estimated for the groups of students enrolled in the four types of institutions during school year 1980-81. The discriminant analysis found that the four groups were different in terms of sex, race/ethnicity, high school program (specifically the vocational/ technical high school program), region of the U.S., tuition and fees, earnings while enrolled in school, grant amounts, and loan amounts. The differences in the four groups based on these variables are discussed below. However, it is interesting to note that the discriminant analysis failed to find unique differences associated with family income levels, ability levels, parental education levels, "intensity" (full- vs. part-time enrollment status), or summer (1980) earnings.

Figure 1--Postsecondary institution enrollment status of 1980 high school seniors: School year 1980-81



Source: High School & Beyond, 1986

Figure 2--Institutional choices of 1980 high school seniors who enrolled in postsecondary programs during 1980-81



Source: High School & Beyond, 1986

Table 1.--Discriminant analyses for HS&B seniors enrolled in proprietary schools, private not-for-profit less-than-2-year schools, public less-than-2-year schools, and public 2-year colleges: 1980-81

Variable	<----Full model----------> Partial R^2	F	PROB > F	<----Reduced model------> Partial R^2	F	PROB > F
Sex	0.0152	9.899	0.0001	0.0171	11.195	0.0001
Race/ethnicity	0.0048	3.120	0.0248	0.0080	5.157	0.0016
Family income	0.0014	0.869	0.4589			
Ability level	0.0034	2.177	0.0873			
Parent education	0.0003	0.165	0.9169			
High school program						
Vocational	0.0034	2.155	0.0899	0.0072	4.634	0.0033
College bound	0.0025	1.592	0.1875			
Region						
Northeast	0.0085	5.516	0.0010	0.0084	5.464	0.0011
Mid-Atlantic	0.0166	10.801	0.0001	0.0167	10.889	0.0001
E North Central	0.0222	14.516	0.0001	0.0213	13.988	0.0001
W North Central	0.0245	16.113	0.0001	0.0245	16.134	0.0001
South Atlantic	0.0170	11.095	0.0001	0.0174	11.385	0.0001
E South Central	0.0160	10.381	0.0001	0.0157	10.260	0.0001
W South Central	0.0136	8.805	0.0001	0.0132	8.569	0.0001
Mountain	0.0254	16.712	0.0001	0.0244	16.097	0.0001
Tuition & fees	0.2207	181.382	0.0001	0.2224	183.674	0.0001
Part-time enrollment	0.0015	0.985	0.4003			
Summer earnings	0.0016	0.996	0.3948			
During the year earnings	0.0100	6.470	0.0003	0.0135	8.813	0.0001
Grant amount	0.0109	7.048	0.0001	0.0106	6.900	0.0002
Loan amount	0.0666	45.726	0.0001	0.0681	46.973	0.0001
Average canonical r^2	0.1611			0.1582		
Wilks' Lambda	0.5509	20.123	0.0000	0.5573	27.674	0.0000
Pillai's trace	0.4833	17.585	0.0000	0.4747	24.174	0.0000

Table 2.--Percentage distributions for four types of postsecondary institutions offering vocational/technical programs: 1980-81

	Proprietary		Non-profit		Public<2-yr		Public 2-year	
	Percent	se	Percent	se	Percent	se	Percent	se
Female	70.3	4.4	75.1	5.4	46.8	5.0	53.5	1.7
Race/ethnicity								
Hispanic	4.5	1.7	2.4	1.3	5.7	2.1	7.5	0.7
American Indian	0.5	0.3	1.2	0.7	2.0	0.7	0.8	0.2
Asian	1.0	0.7	0.0	0.0	0.6	0.6	2.7	0.6
Black	15.2	2.6	11.7	3.1	11.1	2.6	9.1	0.9
White	78.8	3.2	84.7	3.5	80.6	3.4	79.8	1.2
Family income								
Less than $7,000	6.8	2.1	5.1	1.7	9.0	2.2	4.5	0.6
$7,000-11,999	10.2	2.5	5.8	2.7	8.1	2.8	11.4	1.1
$12,000-15,999	18.3	3.9	11.5	4.3	14.4	4.1	14.4	1.1
$16,000-19,999	18.2	3.8	18.8	5.5	11.7	3.3	18.1	1.4
$20,000-24,999	18.9	3.9	25.9	6.2	16.1	3.9	17.9	1.4
$25,000-37,999	14.2	3.4	23.6	5.7	21.6	4.6	20.3	1.4
$38,000 or more	13.4	3.5	9.3	3.7	19.1	4.2	13.5	1.2
Ability (test quartile)								
Low	30.9	4.3	12.9	3.8	30.5	4.6	19.6	1.4
Middle low	26.1	4.3	30.0	6.2	29.1	5.6	28.5	1.6
Middle high	29.1	4.6	43.3	6.2	20.3	4.8	30.8	1.7
High	13.9	3.7	13.8	4.6	20.1	4.5	21.1	1.5
Parent education level								
High school or less	38.8	4.5	36.9	5.9	34.8	5.0	33.6	1.6
Some college	37.8	4.6	38.2	6.8	41.2	5.0	38.3	1.7
BA/BS or higher	23.4	4.1	24.9	6.0	24.0	4.6	28.1	1.6
High school program								
Vocational	48.4	4.5	29.5	6.3	23.9	4.1	22.6	1.4
College preparatory	18.7	3.3	44.5	6.5	39.0	4.8	38.1	1.7
General	32.8	4.4	26.0	5.2	37.1	4.9	39.3	1.7
Region								
Northeast	10.4	3.0	13.5	4.7	6.6	2.8	4.7	1.0
Mid-Atlantic	18.4	3.3	35.6	7.1	8.3	3.3	13.8	1.3
East North Central	24.2	3.9	12.9	4.7	15.7	3.7	17.9	1.3
West North Central	10.4	3.2	5.4	2.8	22.5	4.9	6.8	1.0
South Atlantic	11.1	2.7	8.9	3.0	17.5	3.9	14.7	1.2
East South Central	8.2	2.6	6.3	3.9	8.1	2.3	4.2	0.7
West South Central	3.9	1.9	4.0	2.2	7.3	2.6	6.5	0.7
Mountain	4.0	2.1	10.9	3.6	10.0	3.9	3.6	0.7
Pacific	9.3	2.3	2.3	1.9	3.8	1.8	27.8	1.8
Part-time enrollment	11.3	2.9	8.7	3.4	11.3	3.1	22.9	1.4
Tuition & fees								
$0-249	3.6	2.0	1.6	1.2	16.8	4.1	22.4	1.8
$250-1,499	19.6	3.8	28.0	7.2	55.3	5.4	70.4	1.9
$1,500-2,999	44.0	5.1	51.2	7.3	14.8	3.7	6.6	0.9
$3,000 or more	32.8	4.8	19.3	5.7	13.1	3.7	0.6	0.3
Summer earnings								
Zero	60.9	4.6	62.3	6.2	49.9	5.6	51.7	1.8
$1-199	1.6	1.6	0.6	0.4	1.5	1.2	0.7	0.3
$200-749	14.9	3.6	20.8	5.3	10.9	3.2	12.6	1.1
$750-1,249	9.3	2.9	5.8	2.3	11.7	3.1	13.3	1.2
$1,250-1,999	8.6	2.3	9.3	3.6	13.5	3.4	12.9	1.2
$2,000-2,999	3.7	1.8	0.8	0.5	11.4	3.9	6.5	0.9
$3,000 or more	0.9	0.4	0.3	0.3	1.3	1.1	2.2	0.4

(continued)

Table 2.--Percentage distributions for four types of postsecondary institutions offering vocational/technical programs: 1980-81 -- continued

	Proprietary		Non-profit		Public<2-yr		Public 2-year	
	Percent	se	Percent	se	Percent	se	Percent	se
Earnings while in school								
Zero	28.6	3.9	51.8	6.9	45.3	4.9	34.6	1.6
$1-199	70.1	3.9	35.9	6.4	51.8	5.0	60.9	1.7
$200-699	0.0	0.0	5.7	2.9	1.7	1.2	1.7	0.4
$700-1,149	0.3	0.2	6.2	2.9	0.1	0.0	1.4	0.3
$1,150 or more	1.1	0.9	0.5	0.5	1.2	1.1	1.4	0.4
Grant amount								
Zero	70.2	3.8	59.4	6.6	86.8	2.9	77.6	1.3
$1-199	1.0	0.9	2.5	1.9	1.5	1.2	1.3	0.4
$200-749	7.0	2.1	12.9	4.2	3.5	1.3	9.1	0.9
$750-999	3.6	1.9	3.4	2.0	4.3	2.0	5.5	0.7
$1,000-1,499	8.9	2.6	7.9	3.1	2.7	1.6	3.2	0.6
$1,500-2,249	4.9	1.5	8.9	3.4	0.6	0.3	2.4	0.5
$2,250 or more	4.5	1.6	4.9	2.2	0.6	0.4	0.9	0.3
Loan amount								
Zero	53.0	4.4	59.8	6.6	80.0	4.1	90.2	1.0
$1-999	4.7	2.0	1.9	0.8	1.8	1.2	2.2	0.5
$1,000-1,999	13.5	3.2	15.9	4.9	3.5	1.7	2.8	0.6
$2,000-2,499	4.0	1.6	1.5	0.9	2.5	1.5	0.7	0.3
$2,500 or more	24.9	3.8	20.8	5.4	12.1	3.5	4.1	0.7

Percentage distributions. Table 2 displays the percentage distributions for the groups of students enrolled in these four types of postsecondary institutions during school year 1980-81.

Sex. A larger percentage of the students enrolled in private institutions were female, in comparison to those enrolled in public schools. Three-quarters of the students enrolled in private, not-for-profit schools were female, while the corresponding figure was 54 percent for public 2-year institutions.

Race/ethnicity. While the percentage of minority students enrolled in all four types of institutions was about 15 to 21 percent, there were differences within the rates for minorities. For example, about 15 percent of the students enrolled in proprietary schools were black and about 9 percent of the students enrolled in public 2-year institutions were black.

High school program. Nearly half of the proprietary school students were in the vocational program in high school. For the other three types of postsecondary institutions, less than 30 percent of the students were from a high school vocational program.

Region. Over one-fourth of the students enrolled in public 2-year colleges in 1980-81 were from the Pacific region (California, Washington, Oregon, Alaska, and Hawaii). About 9 percent of proprietary

students were from the Pacific region. More than a third of students enrolled in private not-for-profit schools were from the mid-Atlantic region (New York, New Jersey, Pennsylvania). Only 8 percent of public less-than-2-year students were from the mid-Atlantic region.

Tuition and fees. The four groups of students reported large differences in the levels of tuition and fees. Nearly one-third of the students enrolled in proprietary schools paid $3,000 or more. At the other extreme, less than 1 percent of public 2-year students paid $3,000 or more. Over one-fifth of the public 2-year students paid less than $250, but less than 2 percent of students enrolled in private, not-for profit schools paid less than $250.

Earnings while in school. While very few of the students in any of the four types of postsecondary institutions earned more than $200 while enrolled, there were some differences. For example, over half (52 percent) of the students enrolled in not-for-profit schools did not work. In comparison, about 29 percent of the proprietary school students did not work.

Grants. More students enrolled in private institutions received large grants than their counterparts in public institutions. For example, about 5 percent of proprietary school students had grants of $2,250 or more. In comparison, less than 1 percent of public 2-year students had grants of $2,250 or more.

Loans. About one-fourth of proprietary students had loans of $2,500 or more, while about 4 percent of public 2-year students had loans of $2,500 or more. Similarly, 90 percent of public 2-year students did not get any loans and the corresponding rate for proprietary students was 53 percent. About three-fifths of students in not-for profit private schools did not have loans while about four-fifths of public less-than-2-year school students did not have loans.

Attainment

By 1986, slightly less than half (46 percent) of the group of 1980 seniors who enrolled during 1980-81 in the four types of postsecondary institutions offering vocational/technical programs had attained a license, certificate, associate degree, or bachelor's degree. Slightly less than 1 in 6 (16 percent) had attained a license or certificate. About 1 in 5 (19 percent) had attained an associate degree. Finally, about 1 in 9 had attained a bachelor's degree.

The attainments of the group were modeled using regression analysis (see p. 18 for details). Table 3 displays the parameters of the regression model. Attainment was related to sex, ability, United States region, the type of school, full- or part-time enrollment status, and loan amount. Each of these relationships is discussed below.

Table 4 displays the percentages of the 1980 high school seniors enrolled in the four types of postsecondary institutions in 1980-81 who attained licenses or certificates, associate degrees, bachelor's degrees, or any of these by 1986. It should be noted that if a student attained in two categories, the attainment was recorded in the right-hand column.

Table 3.--Regression models predicting attainment

	<----------Full model---------->						<----Reduced model 1---->				<---Reduced model 2--->			
	df	b	WLS se	BRR se	DEFT	T	b	WLS se	T		b	WLS se	T	
R-square	1810	(.0952)					(0.0761)				(.0731)			
INTERCEPT	1	41.93	5.389				39.21	3.594			40.24	3.464		
Sex														
Female	1	7.71	2.360	3.223	1.37	2.39 #	7.13	2.313	2.26 #		6.96	2.312	2.20 #	
Race/ethnicity														
Hispanic	1	-3.38	5.080	3.797	0.75	-0.89	-3.81	4.991	-1.02					
American Indian	1	13.23	11.358	12.213	1.08	1.08	11.16	11.251	0.92					
Asian	1	18.47	9.040	11.016	1.22	1.68 +	17.59	8.976	1.61					
Black	1	-1.11	4.652	6.304	1.36	-0.18	-1.62	4.511	-0.26					
Family income														
Less than $7,000	1	-7.12	6.023	7.813	1.30	-0.91								
$7,000-11,999	1	-8.66	4.613	6.956	1.51	-1.24								
$12,000-15,999	1	-4.04	4.069	4.588	1.13	-0.88								
$20,000-24,999	1	1.49	3.784	4.569	1.21	0.33								
$25,000-37,999	1	3.67	3.788	4.944	1.31	0.74								
$38,000 or more	1	1.31	4.318	6.373	1.48	0.21								
Ability (test quartile)														
Low	1	-10.21	3.592	5.520	1.54	-1.85 +	-11.71	3.504	-2.18 #		-12.20	3.296	-2.41 #	
Middle low	1	-7.97	2.992	4.569	1.53	-1.75 +	-7.74	2.925	-1.73 +		-7.76	2.917	-1.74 +	
High	1	1.35	3.334	4.652	1.40	0.29	2.97	3.181	0.67		2.75	3.179	0.62	
Parental education level														
High school or less	1	1.52	2.774	3.468	1.25	0.44								
Bachelor's degree or more	1	1.34	2.860	4.642	1.62	0.29								
High school program														
Vocational/technical	1	-4.05	2.976	3.717	1.25	-1.09								
College preparatory	1	0.18	2.891	3.883	1.34	0.05								
Region														
North East	1	15.73	6.284	7.471	1.19	2.11 #	16.27	5.700	2.40 #		15.50	5.626	2.32 #	
Mid-Atlantic	1	1.61	5.005	5.472	1.09	0.29	2.85	4.275	0.61		1.99	4.193	0.43	
East North Central	1	5.27	4.515	5.909	1.31	0.89	4.73	3.739	0.97		4.03	3.639	0.85	
West North Central	1	12.57	5.204	8.090	1.55	1.55	12.19	4.517	1.74 +		11.23	4.429	1.63	
South Atlantic	1	13.46	4.661	5.893	1.26	2.28 #	13.54	4.146	2.58 *		12.36	4.023	2.43 #	
East South Central	1	-11.06	6.062	8.027	1.32	-1.38	-10.44	5.442	-1.45		-11.50	5.352	-1.62	
West South Central	1	5.26	5.493	4.757	0.87	1.11	6.51	5.221	1.44		5.24	5.169	1.17	
Mountain	1	-5.50	6.290	15.884	2.53	-0.35	-4.69	5.900	-0.31		-5.58	5.877	-0.38	
School type														
Proprietary	1	7.55	5.187	8.796	1.70	0.86	9.05	4.249	1.26		9.10	4.246	1.26	
Private not-for-profit	1	-8.09	5.870	8.785	1.50	-0.92	-5.11	5.321	-0.64		-5.14	5.316	-0.65	
Public less-than-2-year	1	13.31	4.560	7.093	1.56	1.88 +	13.93	4.367	2.05 #		14.20	4.365	2.09 #	
Part-time enrollment	1	-12.29	3.062	4.646	1.52	-2.64 *	-12.17	2.972	-2.70 *		-12.23	2.969	-2.71 *	
Tuition & fees														
$250-1,499	1	-4.21	3.831	5.216	1.36	-0.81								
$1,500-2,999	1	5.09	5.495	6.698	1.22	0.76								
$3,000 or more	1	-2.59	7.005	8.730	1.25	-0.30								

(continued)

Table 3.--Regression models predicting attainment -- continued

		<----------Full model---------->				<----Reduced model 1---->				<---Reduced model 2--->			
	df	b	WLS se	BRR se	DEFT	T		b	WLS se	T		b	WLS se	T	
Prior summer earnings															
$1-199	1	-13.18	15.957	22.613	1.42	-0.58									
$200-749	1	-4.60	3.613	6.074	1.68	-0.76									
$750-1,249	1	-4.31	3.821	5.781	1.51	-0.75									
$1,250-1,999	1	1.77	3.836	6.713	1.75	0.26									
$2,000-2,999	1	11.60	5.344	8.055	1.51	1.44									
$3,000 or more	1	-4.33	7.639	12.481	1.63	-0.35									
During academic year earnings															
$1-199	1	-0.38	2.764	3.615	1.31	-0.10									
$200-699	1	8.19	8.825	14.343	1.63	0.57									
$700-1,149	1	-7.98	10.082	10.055	1.00	-0.79									
$1,150 or more	1	8.50	11.661	17.418	1.49	0.49									
Grant amount															
$1-199	1	3.53	8.747	14.404	1.65	0.24									
$200-749	1	5.18	4.063	5.102	1.26	1.01									
$750-999	1	10.33	5.629	8.307	1.48	1.24									
$1,000-1,499	1	0.40	6.820	12.204	1.79	0.03									
$1,500-2,249	1	11.59	7.922	10.653	1.34	1.09									
$2,250 or more	1	4.28	9.737	15.164	1.56	0.28									
Loan amount															
$1-999	1	-10.48	7.873	11.493	1.46	-0.91		-8.66	7.530	-0.79		-8.80	7.495	-0.80	
$1,000-1,999	1	18.42	5.330	6.842	1.28	2.69	*	20.47	5.205	3.06	*	20.73	5.201	3.10	*
$2,000-2,499	1	8.46	9.731	18.088	1.86	0.47		17.06	9.269	0.99		16.97	9.272	0.98	
$2,500 or more	1	-0.73	4.612	6.227	1.35	-0.12		1.83	4.449	0.30		1.78	4.441	0.30	
	(Average DEFT)				1.41										

* indicates p<.01
\# indicates p<.05
\+ indicates p<.10

Table 4.--Percentage of 1980 high school seniors enrolled in proprietary, private not-for-profit technical, public less-than-2-year, or public 2-year institutions during 1980-81 who attained licenses or certificates, vocational degrees, bachelor's degrees, or any of these by 1986

Group/se	License/ certificate	Associate degree	BS/BA or more	Total
Total	15.6	19.1	11.1	45.8
	1.1	1.1	0.9	1.4
Sex				
Male	11.4	18.6	11.9	41.9
	1.4	1.8	1.4	2.2
Female	18.9	19.5	10.4	48.8
	1.5	1.5	1.2	1.9
Race/ethnicity				
Hispanic	13.1	22.0	5.1	40.2
	3.5	3.9	1.2	4.4
American Indian	16.8	25.1	6.7	48.6
	6.1	10.2	3.7	8.3
Asian	18.7	20.5	19.5	58.7
	6.0	4.7	6.3	7.4
Black	19.0	16.1	5.9	41.0
	2.5	2.2	1.8	3.2
White	15.2	19.1	12.0	46.2
	1.3	1.4	1.1	1.6
Family income 1980				
Less than $7,000	18.3	13.4	8.0	39.7
	3.4	3.1	3.3	5.0
$7,000-11,999	10.2	20.7	7.6	38.5
	2.8	3.5	2.3	4.4
$12,000-15,999	19.2	15.8	7.2	42.2
	3.1	2.9	2.0	3.8
$16,000-19,999	17.0	16.5	11.5	45.0
	2.8	2.8	2.4	3.7
$20,000-24,999	14.0	23.7	12.4	50.2
	2.5	3.1	2.4	3.7
$25,000-37,999	12.7	21.0	13.7	47.3
	2.4	3.0	2.5	3.4
$38,000 or more	12.3	18.0	19.8	50.1
	2.7	3.3	3.2	3.9
Ability quartile				
Low quartile	23.0	14.3	2.8	40.1
	2.6	1.9	1.1	2.9
25-49 percentiles	15.8	18.3	9.6	43.7
	2.1	2.3	1.6	3.0
50-75 percentiles	15.3	22.1	11.9	49.3
	2.1	2.5	1.9	2.8
High quartile	10.0	20.8	23.0	53.8
	2.1	2.9	2.9	3.5

(continued)

Table 4.--Percentage of 1980 high school seniors enrolled in proprietary, private not-for-profit technical, public less-than-2-year, or public 2-year institutions during 1980-81 who attained licenses or certificates, vocational degrees, bachelor's degrees, or any of these by 1986 -- continued

Group/se	License/ certificate	Associate degree	BS/BA or more	Total
Parental education				
High school or less	15.4 1.7	21.2 2.0	7.4 1.4	44.0 2.5
Some college	18.3 2.0	15.9 1.7	9.3 1.3	43.4 2.4
BA/BS or more	12.3 1.9	21.2 2.3	17.7 2.2	51.2 2.8
High school program				
General	15.7 1.7	18.0 1.9	9.6 1.4	43.3 2.1
College bound	10.5 1.5	21.5 2.1	20.0 2.0	52.0 2.4
Vocational	22.6 2.5	17.2 2.2	3.7 1.1	43.5 2.8
High school census division				
Northeast	27.1 7.3	17.0 5.4	11.4 4.0	55.6 8.2
Mid Atlantic	10.4 2.1	24.7 3.8	14.0 2.9	49.1 3.6
East North Central	11.6 2.1	19.1 2.7	11.6 2.2	42.3 2.9
West North Central	20.2 3.9	24.5 4.1	14.9 3.5	59.6 4.3
South Atlantic	17.2 2.9	18.8 2.8	13.9 2.9	49.9 3.8
East South Central	11.7 3.2	12.4 3.4	5.3 2.1	29.4 4.3
West South Central	16.8 3.9	23.7 4.7	11.5 3.5	52.0 4.8
Mountain	24.2 7.3	13.9 4.2	1.6 0.7	39.7 7.2
Pacific	15.2 2.3	15.6 2.0	8.6 1.5	39.3 2.7
AY 1980-81 offering & control				
Proprietary	35.1 4.6	18.6 3.6	1.3 0.9	55.0 4.8
Private not-for-profit	12.5 3.9	27.5 5.6	11.1 4.4	51.1 6.0
Public less-than-2-year	23.8 4.4	14.8 3.6	20.9 4.2	59.5 4.7
Public 2-year	12.2 1.1	19.1 1.3	11.3 1.1	42.7 1.5

(continued)

Table 4.--Percentage of 1980 high school seniors enrolled in proprietary, private not-for-profit technical, public less-than-2-year, or public 2-year institutions during 1980-81 who attained licenses or certificates, vocational degrees, bachelor's degrees, or any of these by 1986 -- continued

Group/se	License/ certificate	Associate degree	BS/BA or more	Total
Tuition				
Less than $250	16.2 2.7	16.1 2.6	8.5 2.1	40.8 3.4
$250-1,499	12.8 1.3	20.0 1.5	10.1 1.1	42.9 1.8
$1,500-2,999	15.8 2.9	24.9 3.6	16.4 3.2	57.0 4.1
$3,000 or more	26.2 5.3	15.5 4.6	13.8 4.5	55.4 6.2
Intensity (enrollment status)				
Full-time	15.1 1.2	20.9 1.3	12.8 1.1	48.8 1.6
Part-time	17.4 2.4	12.1 2.0	4.2 1.2	33.8 2.9
Summer earnings				
Zero	15.6 1.4	20.8 1.7	10.4 1.3	46.8 2.0
$200-749	16.4 3.2	19.4 2.9	11.7 2.6	47.5 3.9
$750-1,249	11.6 2.7	22.2 3.4	10.2 2.5	44.1 4.0
$1,250-1,999	16.9 3.1	13.6 2.8	12.6 2.6	43.1 4.0
$2,000-2,999	20.7 4.9	12.8 3.6	13.3 4.1	46.8 5.8
$3,000 or more	15.3 7.2	10.3 5.4	11.0 5.4	36.5 9.3
Academic year earnings				
Zero	16.5 1.7	19.9 2.1	11.9 1.6	48.4 2.3
$1-199	15.1 1.4	18.6 1.4	10.4 1.1	44.0 1.8
$200-699	13.8 7.5	19.4 7.8	26.5 10.6	59.8 10.3
$700-1,149	9.5 3.8	21.1 7.6	1.6 1.3	32.2 8.7
$1,150 or more	20.1 9.6	19.4 8.0	11.6 9.4	51.1 12.7

(continued)

Table 4.--Percentage of 1980 high school seniors enrolled in proprietary, private not-for profit technical, public less than 2-year, or public 2-year institutions during 1980-81 who attained licenses or certificates, vocational degrees, bachelor's degrees, or any of these by 1986 -- continued

Group/se	License/ certificate	Associate degree	BS/BA or more	Total
Grant amount				
Zero	16.2	17.6	11.3	45.2
	1.3	1.2	1.0	1.6
$1-199	23.7	24.4	1.3	49.3
	10.8	11.2	1.3	12.1
$200-749	10.1	25.5	9.6	45.2
	2.6	4.0	2.6	4.6
$750-999	14.0	30.0	8.9	52.9
	3.8	5.7	3.3	6.2
$1,000-1,499	16.9	14.7	8.9	40.4
	5.4	4.5	3.5	6.7
$1,500-2,249	12.9	24.1	10.9	47.9
	4.9	7.0	4.8	8.2
$2,250 or more	12.2	20.6	29.5	62.4
	6.7	8.7	11.7	10.0
Loan amount				
Zero	15.1	18.0	10.2	43.3
	1.1	1.2	1.0	1.5
$1-999	7.2	31.9	13.6	52.7
	3.9	9.0	7.3	8.7
$1,000-1,999	23.1	23.2	20.1	66.4
	5.7	5.4	5.3	6.5
$2,000-2,499	20.9	46.7	7.9	75.5
	10.0	13.6	7.0	10.6
$2,500 or more	18.3	20.4	14.8	53.5
	4.2	4.5	3.8	5.2

Table 5.--Adjusted percentages of HS&B seniors attaining a license/certificate, associate degree, or any other degree by 1986

	b	Predictor means	Adjusted percent
Intercept coefficient	40.24	45.19	
Sex			
Males			46.18
Female	6.96	0.57	53.13
Ability (test quartile)			
Low	-12.20	0.19	41.89
Middle low	-7.76	0.28	46.32
Middle high			54.08
High	2.75	0.21	56.83
Region			
North East	15.50	0.06	61.36
Mid Atlantic	1.99	0.14	47.85
East North Central	4.03	0.20	49.89
West North Central	11.23	0.11	57.09
South Atlantic	12.36	0.14	58.22
East South Central	-11.50	0.06	34.36
West South Central	5.24	0.06	51.10
Mountain	-5.58	0.05	40.28
Pacific			45.86
School type			
Proprietary	9.10	0.09	57.56
Private not-for-profit	-5.14	0.05	43.32
Public less-than-2-year	14.20	0.08	62.66
Public 2-year			48.46
Intensity (enrollment status)			
Part-time	-12.23	0.19	40.21
Full-time			52.44
Loan amount			
Zero			48.84
$1-999	-8.80	0.02	40.03
$1,000-1,999	20.73	0.05	69.56
$2,000-2,499	16.97	0.02	65.81
$2,500 or more	1.78	0.08	50.62

Note: b-values were copied from the reduced regression model, R^2=0.0731 (see table 3). Predictor means were calculated as the weighted means of the dummy variables in the model. Adjusted percentages were calculated by applying the predictor means, or dummy variable values, as appropriate.

Hence, the categories are mutually exclusive. Table 5 displays the percentages of these students' total attainment, adjusted for the relationships identified with the regression analyses.

Sex. The total attainment for females was higher than the total attainment for males. In both tables 4 and 5, the total attainment for females was about 7 percent higher than for males. Table 4 suggests that this difference is most noticable in the rates for licenses/certificates. The female rate was nearly twice that of males, 19 vs. 11 percent.

Ability. In both tables 4 and 5, ability displayed a positive, incremental correlation with total attainment. That is, the more able students attained to a greater extent. Table 4 indicates that this was most noticable in the rates of bachelor's degree attainment. Indeed, only 3 percent of the low ability students attained a bachelor's degree, while 23 percent of high ability students attained a bachelor's degree.

Ability is also shown to be correlated to attainment of associate degrees. As was found with bachelor's degrees, high ability students attained associate degrees at a higher rate than low ability students (21 vs. 14 percent). However, attainment of licenses/certificates was inversely related to ability. The lower ability students attained licenses/certificates to a greater extent than higher ability students. Specifically, 23 percent of the low ability students attained licenses/certificates and 10 percent of high ability students attained them.

Region. Attainment rates were different in different regions of the United States. Table 5 indicates that after adjustments, the attainment rates were highest in the North East and South Atlantic regions. The East South Central region had the lowest attainment rate. The adjustments for the means provided an estimate for the hypothetical case where each region would have the same distributions for sex, ability, school type, intensity, and loans.

School type. Tables 4 and 5 indicate that the attainment rates for students enrolled in the four types of postsecondary institutions offering vocational/technical programs were different. More than half of proprietary school students attain, but most of their attainment is a license/certificate. Indeed, the rate of license/certificate attainment was highest for proprietary schools. In addition, the rate of bachelor's degree attainment was lowest for proprietary students.

The differences in the attainment rates for public less than 2-year schools and public 2-year colleges were interesting. Overall, the students enrolled in public less-than-2-year schools attained at a substantially higher rate (60 vs. 43 percent). The public less than 2-year schools are more focused on licenses/certificates and public 2-year colleges are more focused on associate degrees. Table 4 shows that 24 percent of public less than 2-year students attained a license/certificate while 12 percent of public 2-year students attained a license/certificate. On the other hand, while the public less than 2-year students earned associate degrees at a slightly lower rate (15 percent), public 2-year students earned associate degrees at a higher rate (19 percent). Finally, the bachelor's degree attainment rate was higher for public less-than-2-year students than for public 2-year students (21 vs.

11 percent). This finding was particularly surprising given that some of the public 2-year students were in academic programs.

Intensity. Part-time students attained at a lower rate than full-time students; by about 12 percent (as shown in Table 5). Interestingly, intensity of enrollment did not show any difference for license/ certificate attainment (see Table 4).

Loan amount. Table 5 tends to support the notion that the loans students received influenced their subsequent attainment. It appears that this relationship has a threshold near $1,000. That is, loans of $1,000 or more improve the likelihood of attainment.

Methodology and Technical Notes

This report has data from the High School and Beyond first (1982), second (1984), and third (1986) follow-ups of 11,995 high school seniors who began with the study in 1980. These students responded to questionnaire items concerning when and where they attended postsecondary institutions. They also responded to items concerning employment. In addition, the student financial aid records from the postsecondary institutions attended and data from the Pell Grant award files, U.S. Department of Education, were merged with the HS&B data. These records were the basis of the estimates in this report. Interested readers should consult *High School and Beyond 1980 Senior Cohort Third Follow-Up (1986) Data File User's Manual* (Sebring, P., et al, Chicago: National Opinion Research Center, 1987) and *High School and Beyond Financial Aid Supplement (Senior Cohort) Data File User's Manual* (J. Smith & K. Hall, Rockville, MD: Westat, Inc., 1987) for further details concerning the HS&B data.

Not all 11,995 of the HS&B seniors attended postsecondary education institutions between 1980 and 1986. Over 4,200 of the HS&B seniors never attended postsecondary institutions during the period 1980 to 1984. During school year 1980-81, 2,539 of the remaining HS&B seniors attended proprietary schools, private not-for-profit technical schools, public less-than-2-year schools, or public 2-year institutions. All estimates were calculated using FU2WT, a weight designed for use with HS&B second follow-up and student financial aid data.

Accuracy of Estimates

The statistics in this report are estimates derived from a sample. Two broad categories of error occur in such estimates: sampling and nonsampling errors. Sampling errors happen because observations are made only on samples of students, not on entire populations. Nonsampling errors happen not only in surveys of sample groups but also in surveys of complete censuses or entire populations.

Nonsampling errors can be attributed to a number of sources: inability to obtain complete information about all students in all schools in the sample (such as some students or schools refused to participate, or students participated but answered only certain items); ambiguous definitions; differences in interpreting questions; inability or unwillingness to give correct information; mistakes in recording or coding

data; and other errors of collecting, processing, sampling, and estimating missing data.

The accuracy of a survey result is determined by the effects of sampling and nonsampling errors. In surveys with sample sizes as large as those in the HS&B study, sampling errors generally are not the primary concern, except where separate estimates are made for relatively small subpopulations such as Asian-Americans or American Indians. In this report, small sample sizes were not a problem.

The nonsampling errors are difficult to estimate. The major sources of nonsampling error considered were nonresponse bias, and the reliability and validity of the data. The HS&B instrument response rates were all above 85 percent and the item response rate within instruments, for the items used to develop the estimates in this report, were above 95 percent. The weights used to calculate the estimates were constructed in a fashion that compensated for instrument nonresponse. Investigations of the nonresponse bias found no major problems (see *High School and Beyond First Follow-Up (1982) Sample Design Report*, by R. Tourangeau, H. McWilliams, C. Jones, M. Frankel, and F. O'Brien, Chicago: National Opinion Research Center, 1983).

The reliability and validity of the HS&B data have been examined in *Quality of Responses of High School Students to Questionnaire Items* by W. Fetters, P. Stowe, and J. Owings, Washington: National Center for Education Statistics, 1984. This study found that the reliability and validity of responses vary considerably depending on the item and the characteristics of the respondent. Contemporaneous, objective, and factually-oriented items were more reliable and valid than subjective, temporally remote, and ambiguous items. Older, white, or high-achieving students provided more reliable and valid responses than did younger, minority group, or low-achieving students. The estimates in this publication are reasonably reliable and valid.

Statistical Procedures

The discriminant analyses presented in this report were computed using PROC STEPDISC of the Statistical Analysis System (*SAS User's Guide: Statistics 1982 Edition*, Cary, NC: SAS Institute, 1982). To minimize the effects of the complex HS&B sample, the criterion for elimination of variables from the discriminant function was $p<.01$ rather than the typical $p<.05$.

The descriptive comparisons were based on Student's t statistics. Comparisons included estimation of the probability of a Type I error, or p-values. The p-values were determined by comparing the Student's t values with 1.65, 1.96, and 2.58 for the 90, 95, and 99 percent confidence levels, respectively. All descriptive comparisons cited in this report were significant at the 0.05 level or better, unless otherwise noted.

Standard errors were included in each descriptive table for interested readers. Student's t values may be computed for comparisons using these tables' estimates with the following formula:

$$t = \frac{P_1 - P_2}{SQRT(se_1 * se_1 + se_2 * se_2)}$$

where, P_1 and P_2 are the estimates to be compared and se_1 and se_2 are their corresponding standard errors.

The regression analyses presented in this report were computed using PROC REG of the Statistical Analysis System (*SAS User's Guide: Statistics, 1982 Edition*, Cary, NC: SAS Institute, 1982). Although all models were based on covariance matrices computed using FU2WT, and the degrees of freedom were adjusted appropriately, the resulting standard error estimates were biased. The bias was due to the stratified design of HS&B. SAS PROC REG uses simple random sample techniques for the computation of standard errors. Simple random sample techniques bias the estimates of standard errors when the sample is complex as is true for HS&B.

The standard errors of the regression b-coefficients were adjusted by using a **design effect**. For the full model, the standard errors were calculated using balanced repeated replication (BRR) procedures (*The BRRVAR Procedure: Documentation*, Wise, L. L., Palo Alto, CA: American Institutes for Research, 1983). The design effect for each predictor in the full regression model was the ratio of the BRR estimate and the weighted least squares (PROC REG) estimate.

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